SCIENCE & GOVERNMENT REPORT

15th Year of Publication

The Independent Bulletin of Science Policy

Volume XV, Number 21 P.O. Box 6226A, Washington, D.C. 20015 December 15, 1985

Q&A: NSF Director Erich Bloch

Deficit Cuts Spur Quest for New Science Funds

With deficit-cutting horror scenarios resounding through the capital, a "reallocation strategy"—designed to shift more federal R&D money into basic research in universities—has been urged in public and private forums over the past several months by NSF Director Erich Bloch. On December 2, he argued his case to a friendly assemblage of some 25 university and industry leaders at a private dinner at the National Academy of Sciences, which is now looking into holding a bigger pow-wow to build up support. As a likely temporary fill-in for departing Presidential Science Adviser George A. Keyworth—and possibly more than that—Bloch's presence may extend far beyond the narrow base of NSF. He talked with SGR Editor Greenberg on December 5. Following is the text, transcribed and edited by SGR.

•

SGR. *Are you expecting flat budgets for the next few years?*

Bloch. That's the only assumption we can plan on right now. Do I like it? No, I don't like it. I would like to see increases in basic research.

SGR. *In several recent speeches, you've said we have to reallocate money to basic research (SGR Vol. XV, No. 19, "NSF Head Urges R&D Fund Shift to Basic Science"). Whose money do you want to take?*

Bloch. I would like to take money out of the applied research or development areas of the federal government and put it into the basic research area, wherever basic research is being funded. Some of it is being funded in NSF, some of it in NIH, DoD, DoE. I don't care where it goes, as along as we do that reallocation.

Keyworth Quits White House Post; NSF Head Offers to Fill In—Page 8

SGR. *Everyone is eyeing DoD's big budget. Is it politically too sensitive to say that you think DoD should take money out of this and put it into basic research?*

Bloch. First of all, I'm in no position to say that.

SGR. *You've made reference to DoD in some of your talks.*

Bloch. I've been saying that if you look where the big bucks are, it happens to be that DoD is one of those with big bucks. But, I'm not saying take it out of there, and, second, even if I would say it, what would it mean? I'm calling for a strategy which I think is a rational one and that everybody, I think, should subscribe to: In tight times, you prioritize. You don't expect not to do anything new just because you don't have any incremental resources. I just rebel against that kind of a notion. You do what is right to do and what is important to do, even though you don't have any important [additional] resources. And that, to me, means prioritization and reallocation.

SGR. Where do you find allies within the Administration for your reallocation concept? Are you a voice in the wilderness?

Bloch. Sometimes I feel like that. Time will tell. I think the time has come to put that forth. I don't know where people will line up on it. I don't think it's such a

(Continued on page 2)

In Brief

Congress is showing unexpected support for putting more Pentagon money into university research. The Administration asked for $25 million this year for what DoD calls its University Research Initiative. The House okayed that amount, but the Senate upped it to $100 million. The final figure is likely to be midway between the two. DoD plans to put the money into such hot fields as artificial intelligence, robotics, biotechnology, and energy technology. Support will also be provided for fellowships, travel, and instruments. Details available soon in a brochure from Leo Young, Director, Research and Laboratory Management, 3E 114, Pentagon, Washington, DC 20301; tel. 202/697-3228.

Scientific American, long the dreadnought of scientific periodicals, is experiencing hard times in advertising. Total ad pages are down by 32 percent this year, part of a generally weak pattern that's afflicted scientific periodicals aimed at the general public. ***Omni*** *dropped by 10 percent;* ***Science85*** *by 22 percent;* ***Discover*** *by 4 percent, and* ***Science Digest*** *by 27 percent.*

Meanwhile, plans for that new science biweekly, *The Scientist* (SGR Vol. XV, No. 19), are proceeding while a court date has been set for January 6 in a software piracy civil case brought against one of its partners, the Institute for Scientific Information, of Philadelphia. Still to be heard from is a grand jury weighing evidence against ISI and its founder-President Eugene Garfield. The British weekly *Economist*, ISI's partner in the new publishing venture, is reserving the right to pull out, depending on the outcome of the legal proceedings.

. . . 2-Percent R&D Shift Would Add $1 Billion

(Continued from page 1)

controversial subject.

SGR. *Everyone thinks it's a lovely idea, except for getting the money from a constant or declining budget.*

Bloch. Look, if you have a finite pot sitting here, and you have more things to do than you could do, you prioritize and you reallocate. And that's all I'm saying.

SGR. *But you're saying that basic research should be put at the top of the heap.*

Bloch. No, not at the top of the heap. I'm not saying it should get a majority of the dollars. I'm saying it should get treated better than it has been treated so far.

SGR. *It should get more dollars.*

Bloch. It should be more dollars—at the expense of something else.

SGR. *That "something else" is enamored of what it's getting the dollars for.*

Bloch. I'm sure that's true. I'm not saying it's easy.

SGR. *Would you take it from nuclear power, coal research, from—?*

"Huge Amount" in R&D Budget

Bloch. You're not going to trap me into that morass. First of all, it's meaningless for me to say anything like that, and secondly, it would not be very helpful. I think there are other people around who have the job of making tradeoffs. I can only point to particular areas, and that particular area is essentially the non-basic research and development part of the federal budget, which is a huge amount. And just taking 2 percent, which would be $1 billion, away from that—2 percent is not that much. But $1 billion added to the university basic research budget would be important.

SGR. *What's the evidence of underfunding of basic research?*

Bloch. Right now, we're spending for basic research about $8 billion out of the $55-$60 billion that the government funds in total R&D. Not all of that basic research is in universities. If you look at the total country, with industry's spending, we have a total of $10 billion on basic research, out of [a national R&D total] of $120 billion. That's about 8 percent on basic research. And it's at a point in time when there are all kinds of things happening in basic research, when there are more opportunities than ever before, where there's a ferment going on, where we have a shortage in many fields of people who can do science and engineering, especially PhDs.

Second, we have some competitors out there that are becoming stronger in basic research, that are putting additional money in.

Last but not least, if you look at basic research as a percent of the total federal budget, it has gone down, because the other parts of the R&D budget have gone up significantly. With all of that, I'm saying, what the hell, we should probably be at a point where we have 15-16 percent of the federal [R&D] budget in basic research.

Underfunding Universities

SGR. *What's going undone for lack of money in basic research?*

Bloch. We are underfunding the universities in instrumentation and facilities. We have talked about that for a long time. Another indication is that our PhD rate is dropping, especially US citizen participation. In absolute numbers, it's dropping in engineering, computer sciences, and mathematics. In biotechnology, for instance, we're not pouring the money in that it deserves at this point; we're underfunding that. We have been underfunding mathematics, which underlies a whole lot of different things.

Those are all indicators. Now, is there a magic formula that tells you how much you are underfunding it? No, there is not. But, I'm saying that if you program the system, you see all these fairly difficult situations that scream at you. So, you know there is something wrong. We can have an argument over by how much we are underfunding it.

SGR. *In the age of new priorities, constraints, and austerity—just talking about what goes on at NSF—what gets jettisoned?*

Bloch. We went through the '85 and the '86, and the '87 budget that we submitted, by first calling out a percentage of what was ongoing kind of work. And the goal we had was something like 8.5 to 10 percent of money

(Continued on page 3)

ISSN 0048-9581

© Science & Government Report, Inc., 1985

Editor and Publisher
Daniel S. Greenberg

Associate Publisher
Wanda J. Reif

Contributing Correspondents
Francois Seguier (Paris); Ros Herman (London)

Independently published by *Science & Government Report, Inc.*, twice monthly, except once each in January, July, August, and September. Annual subscription: Institutions, $185.00 (two years, $325.00). Information about bulk and individual rates upon request. Editorial offices at 3736 Kanawha St. N.W., Washington, DC 20015. Tel. (202) 244-4135. Second-class postage at Washington, D.C. Please address all subscription correspondence to Box 6226A, Northwest Station, Washington, DC 20015. Reproduction without permission is prohibited. SGR is available on Xerox University Microfilms. Claims for missing back issues will be filled without charge if made within six weeks of publication date.

. . . Time May Come to Terminate Some Programs

(Continued from page 2)

that has to get freed up for new things before you add new money to it. So, we have done some of that.

SGR. *What is the goal?*

Bloch. My goal is that every year, you cut out something like 10 percent.

SGR. *You will cut out 10 percent of ongoing activities?*

Bloch. Of ongoing activities and use it to start new things.

SGR. *Specifically, where will those cuts be?*

Bloch. In all areas. Sometimes, it's on individual, single investigator things, and sometimes it's on discontinuing larger projects.

SGR. *Is it across the board?*

Cuts Across the Board

Bloch. It's across the board.

SGR. *Isn't that a blunt way to do it? There may be some activities that shouldn't be cut across the board.*

Bloch. I'm sure I hear that from everybody. What would you want me to do, more on a selective basis? Have I gone in and said, 20 percent out of this directorate and nothing out of that one? No, I haven't done that, because I think it's very important that you look at your total base. In the total base, there's always something you can eliminate. The time may very well come where we have to close down certain undertakings, or certain fields, or certain programs, or certain projects because we just can't afford it any longer. We might come to that. I'm not going to say that we're not going to do that or that we're not going to have to do that.

SGR. *Are you going to alert the victims at an early stage?*

Bloch. If I knew who the victims were. By the way, I closed down one program [Ethical Values in Science and Technology, budgeted for $1 million, designated for termination and then reprieved by Bloch in October following protests], and I got all kinds of trouble on it. So, don't tell me I didn't close down a program.

SGR. *But it proved to be immortal.*

Bloch. Well, I don't know if it's immortal. Time will tell how immortal things are. I'm not beyond closing down a program.

SGR. *Why the emphasis at NSF on the Engineering Research Centers [a program of multidisciplinary centers that NSF began supporting at 6 universities this year—SGR Vol. XV, No. 17]?*

Bloch. We're seeing a tremendous amount of change going on in the way science and engineering research is being done. The changes that are occurring are essentially that a lot of the areas are becoming more and more multidisciplinary. And the Engineering Research Centers, in that area called engineering, are really an answer, where the [traditional] disciplinary approach to life is not. I'm not saying we should rid of it. But in addition to that [disciplinary] approach, there is another one that we need to focus on and promulgate and make sure that the universities can live up to it. And that is the multidisciplinary area. What's true in engineering, you can see in biotechnology and in many of the other areas.

The second thing that you see is that computer science and computer engineering have gotten to a point where they provide new tools today which didn't exist before and which change the way science is being done. And again, it makes all of these areas more multidisciplinary. The whole drift of instrumentation, big bucks having to go into relatively simple instrumentation, make it more of a group activity than it was before. So, in addition to the disciplinary, single investigator kind of an approach, the time is ripe to focus on these more multidisciplinary approaches.

That's why the focus on Engineering Research Centers a couple of years ago, and now that model is being expanded and used in some of the other science areas. The universities have seen the drift—otherwise, we wouldn't have gotten 140 proposals the first time and 100 proposals the second time, even though everybody knew we probably would only give out a handful, as we have done.

"We Have Some Mortgages"

SGR. *The Foundation has an annual budget of $1.5 billion. It's spending about $20 million on these centers. That doesn't suggest a high priority here, given the fact that Congress allows you considerable latitude in how you spend your budget.*

Bloch. Look at it a little bit differently. We're spending $150 million on engineering, and the Engineering Research Centers are in [fiscal] '86 about $20 million out of that. That's fairly significant. That's not a small part of that one. You're right, compared to $1.5 billion. Secondly, we have some other centers in the Foundation. Look at the Materials Research Centers. Those are centers which predate the Engineering Research Centers, but are built pretty much on the same model.

The point is, we have a certain obligation to continue things. That's why I said before, it's not an either or. I think we put a lot of money into the Engineering Research Centers. If we had gotten a different kind of a budget out of Congress, we would probably see more of it in 1986 than we're seeing today.

We're not as free as you would want to be in distributing the money, because we have some mortgages that we're dragging along. I think we have done as much as we possibly could do. Could you add some more money into that? Yeah, probably you could, but then you would have to take it away somewhere else and my

(Continued on page 4)

. . . Industrial Support Rising but Still Small

(Continued from page 3)
decision was not to do that.

SGR. *You and [Presidential Science Adviser George] Keyworth have spoken of $500 million for additional Engineering Research Centers.*

Bloch. Keyworth has spoken of $500 million. I'm a bigger spender.

SGR. *There's no political realism whatever to that, is there? If you go to [White House Chief of Staff] Don Regan or to OMB and say that you want to start up a new $500 million program for universities, you're not going to be well received these days.*

Bloch. I'm sure we're not going to be well received. That's why I have been focusing on this reallocation thing, knowing quite well that the pie will not increase in size. I think that might not be politically real, but from a business viewpoint, it makes a lot of sense.

SGR. *Are you expecting industry to kick in substantially to the $500 million?*

Bloch. Industry is substantially kicking in to the [existing NSF-supported] Engineering Research Centers, and whatever they kick in would be on top of what the government puts in there.

"Always a Tiny Slice"

SGR. *Despite the talk about industrial aid for universities, it's still a very tiny slice of the federal contribution.*

Bloch. It will always be a very tiny slice of the federal. I think that's the wrong way to look at it. Industry's support to universities for research has about doubled in the last 4 or 5 years, from about 3 percent to something like 5 or 6 percent [of universities' total research expenditures]. If you look at certain areas, and in particular, if you look at certain universities, it really makes a significant contribution.

At Rensselaer Polytechnic Institute, their industry-supported research is about 25 percent of their total research. At Georgia Tech, it's about 15 percent, and theirs has about doubled or tripled over what it was a few years ago. It will always be a small base. But in certain important areas, it made a tremendous difference.

And you shouldn't always look at the dollars that industry puts into universities. The cooperation between the two adds things to it which you don't find on the bottom line. It has to do with people interaction, with knowing what goes on in a university and vice versa what goes on in industry. And solving a problem together is always important. We have always said we are not very good on information transfers into industry from universities.

SGR. *Do you share the concerns that an expansion of the relationship might grow to be incompatible with traditional university values?*

Bloch. No. I have a lot of confidence in the universities and in industry that they understand their respective roles and that they can take care of themselves.

SGR. *There have been difficulties in some places.*

Conflicts of Interest

Bloch. There are always difficulties. Look, I'm upset about a few things, too, that are going on there. I'm not saying it's clean. There are some conflicts of interest emerging once in a while. I know of a couple. And that's to be expected, okay? That's a new role for everybody. But I think the system will even those out and will take care of it. If both of them are guarding against it, then I don't have much of a problem. By the way, it's easier to do in certain areas than in other disciplines. In electronics, it's easier to do than in pharmaceuticals, for obvious reasons.

SGR. *You've been urging attention to the coming demographics of university science and engineering enrollments.*

Bloch. If the attraction rate to science and engineering stays constant—and it hasn't changed very much in 10 years; it's gone up a little bit, but not much—then with the dropoff of the 22-year-old population, we are going to be in a deficit position year after year after 1990. That's assuming a flat rate of production [of graduates] is required, but I think an increasing rate is what's required.

SGR. *You've also expressed concern about the high percentages of foreign students in PhD programs, particularly in engineering.*

Dependence on Foreign Manpower

Bloch. Because, my concern is that our dependence on the foreign influx for this area is becoming too high. Look what happened in Iran—from one year to the next it got shut off. We have no control over that population.

SGR. *We seem to be able to get all the foreign students we want.*

Bloch. Right now we can. [Jokingly] What I'm saying is why do you want to make the PhD track an un-American activity? All I'm saying is that I consider it a problem, because it's a dependence over which we have no control. What happens if China gets more industrialized, where they need their own people? They'll be interested in having those people come back. Today, a lot of them stay here, and that's our salvation. Many companies out there, especially in the semiconductor industry, would have to close the shop if all the Chinese-born PhDs would leave tomorrow morning. I'm saying that's an uncomfortable position for the United States to be in.

Deficit Politics: Turmoil Looms, AAU Head Warns

Strategy for the on-rushing era of deficit reduction has become the central topic in Washington science-policy and higher-education circles. Here we offer excerpts from an analysis, "Dealing with the Deficit—Hard Choices," by a perceptive, well-placed observer, Robert M. Rosenzweig, based in Washington as President of the Association of American Universities. Consisting of 50 institutions, most of them major recipients of federal R&D support, the AAU closely monitors research politics, funding, and regulations. Dated November 21, Rosenzweig's analysis was written for officers of AAU institutions.

•

Any serious effort to reduce . . . deficits will have profound effects on the social fabric of science and higher education in America . . . . Furthermore, there is already evidence of competition and serious division among groups whose alliance helped to make the growth of federal patronage possible . . . .

Twice in recent months, interests representing the scientific profession have been publicly at odds with those that represent the institutions in which most scientists work. The most dramatic and contentious case is the active lobbying by some scientific societies in support of a freeze on NIH indirect cost rates in order to assure a specified number of new research grants from the FY 1986 budget. In the second instance, that same perceived competition between the direct cost of research—that part of project funding that supports scientists directly—and the total cost of research, which includes the cost of structures that undergird research, has already begun to surface in debates over ways to remedy the serious shortage of capital for research facilities and instrumentation.

That artificial . . . division between allies and colleagues will become even more complicated and divisive as deficit reduction takes its place at the top of the budgetary agenda . . . . Within science itself . . . there will be powerful advocates for traditional project research, others who will see the future as lying in the direction of new cross-disciplinary centers, and still others who will be promoting such large enterprises as the Superconducting Super Collider . . . .

For the first time, the support of academic science is likely to be directly competitive with government support for other academic purposes. The large student-aid programs, programs in support of libraries, graduate fellowships, and international and foreign-area studies will all have their vocal and committed advocates. Unless reductions are made by an automatic formula, the prospect of conflict in the Congress among important university purposes is an unpleasant one to contemplate. Indeed, even if that particular conflict is avoided by some system of automatic reductions in all programs, the same battles will need to be fought on every campus, unless new funds are available from somewhere else to compensate for the loss of federal appropriations . . . .

It seems likely that a [new] period of funding for research and universities is about to begin . . . a period of retrenchment and retraction . . . . The problems will need to be faced at two levels. Individual campuses will need to become forums for the education of their own members about the issues and for debates about their resolution. Many faculty members have only the sketchiest notions, often wrong, about how their own institutions operate and what its real needs and costs are . . . . Moreover, the debate will need to be more than a conversation between scientists and institutional administrators, for what will be abundantly clear is that reductions in science funding or in federal support for student aid—the most vulnerable categories—can be replaced by institutional subsidies only at the expense of resources that would otherwise go to other activities . . . .

•

One of the most striking devlopments of the last 2 decades has been the growth of the number of academic interests represented in Washington. Since they multiplied and grew in relatively conflict-free times, they also grew in relative autonomy, each pursuing the interests of its members, which in most cases consisted of claims for more money.

As a result, important areas of policy are heavily influenced by the representatives of campus officials who have far less influence on their own campuses than they have in Washington. That source of distortion is compounded by the way in which real but small differences on campus can become large and emotional ones as they are abstracted from their campus contexts, aggregated nationally, and amplified by special interest organizations. For these reasons and others, the academic community is ill-prepared intellectually and organizationally to deal with the issues produced by diminishing resources.

It is unlikely that new structures can or should be invented for the purpose, so it is up to those that exist and have the broadest and most comprehensive view of science, scientists, and universities to take the lead. Current conditions and needs will need to be better documented. For example, a more textured and nuanced description of the need for the construction and renovation of scientific facilities will need to be developed to take the place of the existing extrapolations from anecdote to national policy.

The current debate between full funding of research and the maintenance of a guaranteed number of research grants needs to be informed by better analysis of the effects of alternative policies on such matters as institutional stability, the careers of young

Continued on page 6

Britain: Universities Chasing Industrial Funds

London. The science and technology departments in Britain's 45 full-fledged universities are slowly shedding their ancient aversion to commercial dealings and are opening their doors to contacts with industry. That's old stuff, of course, on the American scene, where academic-industrial ties are well-established and now booming, not just cautiously getting started. But cultural change comes slowly to the British academic world, where industrial consulting—let alone running a business on the side—still remains so rare that it arouses comment.

Change is evident, however, as universities seek out relations with industry through a number of formats that previously received only scattered attention here. Campus science parks have been set up as supporting bases for small high-technology firms and the welcome has been extended for industry-supported professorships and research projects in university departments.

More Cuts for Universities

The universities have long been the object of political exhortations to do something for the economy, but money rather than oratory has been been the decisive factor for change. It currently costs about $2 billion a year to run the university system, of which some 65 percent comes from the national treasury via the University Grants Committee (UGC), which disburses general-support funds to the universities. Additional funds are provided by the research councils (the equivalent of US government research-supporting agencies), the Department of Education and Science, and tuition payments by foreign students.

Unfortunately, the funds from these sources have been declining. According to John Burnett, Principal of Edinburgh University, the universities have lost about 15 percent in real income since 1979 as a result of UGC cuts and a decline in foreign enrollments. Still worse lies ahead, for the universities have been told to budget for an average reduction of 2 percent a year in UGC funds to the end of the decade; the research councils are aiming for a similar decline.

The financial pressure has been accompanied by constant badgering, voiced in government circles from Mrs. Thatcher downward, and also in industrial circles, for the universities to make their science and technology more relevant to the country's short-term industrial needs. In terms of specifics, that means less emphasis on theoretical activities and more on problem solving that helps the UK's competitive position.

The new atmosphere has been especially favorable to researchers in computers and information technology. Government money for these fields has been abundant, thanks mainly to the $280-million Alvey program in advanced computing, which began 2 years ago. Designed to stimulate British industry in this area of fierce international competition, the program has been spreading money around university departments and industrial firms; the latter are also putting up some $200 million of their own.

The UK universities looking to the future with the least anxiety these days are the few that took the plunge into industrial relations several years ago. For example, Surrey University, a newish "red brick" institution some 30 miles southwest of London, began developing ties with industry in the 1960s. Its newly opened science park contains the research headquarters of several major firms, such as BOC and Grand Metropolitan, plus several up-and-coming small fry. Surrey has also started an American-style "associates club" in which, for $7000 a year, a company is given access to research results in the university's commercially minded departments. Among those who have joined up are GKN, Shell, Norcross, Air Products, and Kuwait Oil.

Another university that's taken the industrial route is Salford, one of the hardest hit in the UGC cuts of recent years. Unlike Surrey, which is sited in the prosperous south, Salford University is in the industrial heartland of Lancashire, one of areas most severely affected by the recession. Salford lost little time, however, bemoaning its UGC cuts. Instead, it quickly brought more than 100 firms into an association linked to the campus and it also sponsors a thriving company which now earns some $5.6 million a year performing research for industry.

Continued on page 7

Rosenzweig *(Continued from page 5)*

scientists, and the willingness to take on problematic but potentially high-yield research topics . . . .

. . . such organizations as the National Academies [of Science and Engineering], the American Association for the Advancement of Science, the Association of American Universities, the American Council on Education, and the National Association of State Universities and Land-Grant Colleges should think of ways to bring the issues to their members . . . in ways that illuminate the areas of conflict by bringing their members together with those who view the issues from different perspectives.

Unless we know more than we know now and understand better the circumstances that lie ahead . . . we may expect policy to be determined solely by battles between battalions of advocates whose purpose is to win as much as they can for those they represent and whose practical concern for the system as a whole extends to the boundaries of their membership. The nation deserves better.

(The full text of Rosenzweig's paper is available from the Association of American Universities, One DuPont Circle Nw., Suite 730, Washington, DC 20036; tel. 202/466-5030.)

. . . UK Universities Due For Massive Cuts By 1990

Continued from page 6

On an individual basis, some university scientists have developed their own industrial activities. Professor Chris Dainty, an optics engineer at London's Imperial College, is unusual for a British academic in that he's director of a company, a small electronics concern called Ealing Electro-optics.

Fresh from a spell at the University of Rochester, in New York, where he was involved in an industrial associate scheme, he has also established a similar venture in London. A dozen companies have joined up, each paying $7000 a year for the privilege of sitting in on Dainty's optics seminars and getting a first crack at recruiting his students.

Some Fields Suffer More

The losers in all this are the researchers whose specialties are out of political or economic fashion—prominent among them geology, agricultural science, and anything to do with the environment. The research councils experienced a real decline of approximately 21 percent in funds provided to them by the government over the past decade. With the few chosen fields holding priorities for growth, the less trendy ones have been hit hard.

Science-policy administrators have produced calculations which indicate that even grimmer days lie ahead for many fields of science in Britain as government support continues to decline. The basic numbers are as follows: Total support for university-based research in science and technology comes to about $420 million a year, of which some $45 million is provided by industry. In addition, there's another $150 million or so of industrial money that universities receive for an assortment of activities ranging from the provision of special courses to income from interests in university-spawned research companies.

An optimistic forecast shows a total increase of perhaps $100 million from all types of industrial support to academic science and technology in 1990. But by that year, annual UGC support is scheduled to drop by over $180 million from the present level, while similar—though still unspecified—cuts are planned in support from the research councils.

The links with industry are becoming thicker as British universities search for new sources of support. Government aid may fluctuate a bit, but no one doubts that the long-term trend will be down sharply. Even the best-case scenario suggests a long stretch of hard times for all but that handful of disciplines that are visibly beneficial to industry.—Peter Marsh.

(The writer is technology correspondent for the *Financial Times* of London.)

Overhead Rates II: ONR's List

Completing the list that began in the last issue with overhead rates that the Department of Health and Human Services establishes for major academic recipients of federal research funds, following are the institutions rated by the Office of Naval Research. In all cases, the rate is for on-campus research. The two federal agencies rate many institutions in addition to the 125 listed by SGR, but the ones we've carried are known as "high-dollar" universities. Collectively, they account for some 90 percent of all federal research awards to academe.

•

Calif. Inst. Technology	58.0
Carnegie-Mellon Univ	55.0
Columbia University	74.1
Cornell Univeristy	60.6
Dayton, University of	57.5
Georgia Inst. of Tech	55.3
Hawaii, University of	43.0
Illinois, U. (Chicago)	57.0
Illinois, U. (Urbana)	48.4
MIT	61.5
New Mexico State Univ	51.5
Pennsylvania State	46.0
(Hershey Med. Center)	54.0
Rhode Island, Univ. of	50.0
Rochester, Univ. of	56.0
Stanford University	69.0
Woods Hole Ocean. Inst	31.2

To Order or Renew A Subscription

Science & Government Report
Northwest Station
Box 6226A
Washington, D.C. 20015

☐ Renew my subscription
☐ Check enclosed
☐ Enter my subscription
☐ Please bill

Institutional subscribers:
one year, $185.00 ☐; two years, $325.00 ☐
(Overseas airmail, $30.00 per year additional.)

Name _____

Address _____

_____ Zip _____

Keyworth Quits, Bloch Offers Temporary Fill-In

NSF Director Erich Bloch has "offered to help" with White House science advice pending selection of a replacement for George A. Keyworth II, who announced on Thanksgiving eve that he's going into private business at the end of this month. The temporary arrangement was recommended to White House Chief of Staff Donald Regan by Keyworth, and reportedly there was no objection, but neither was there official word at this writing that it's been accepted.

Keyworth, who held the office since April 1981, will start down the well-trod route of Washington consultant when he opens for business as a corporate adviser, in partnership with Herbert Meyer, Deputy Chairman of the National Intelligence Council and former aide to CIA Director William Casey. Doing business as Keyworth-Meyer/International they plan to instruct corporate clients on how to set up inhouse intelligence-gathering and analysis capabilities.

Also joining the venture will be Keyworth's longtime spokesman and speechwriter at the Office of Science and Technology Policy, Bruce Abell, who was on detached duty there from NSF, where he had previously worked for 11 years. Abell said the firm will open an office in Washington and that its aim will be "to teach corporations how to gather and sift information on things like the impacts of technological developments and changes in international markets."

Unknown when he arrived in Washington from a career in physics at the Los Alamos National Laboratory, Keyworth is widely regarded as having had a highly successful tenure as Reagan's Science Adviser. The big budget growth in R&D occurred on his watch; respected, mainstream figures were recruited for senior R&D posts, and the scientific secrecy zealots in the Pentagon and elsewhere were largely held in check.

Keyworth's ardor as a spear carrier for the Strategic Defense Initiative produced disdain among those who preferred less passion and more evenhandedness in the White House Science Office, but Keyworth appears to be a true believer on Star Wars. He feels disdain for those don't share his enthusiasm.

If there was a precipitating event for his departure, it has gone undetected. Keyworth got along very well with Presidential Counselor Edwin Meese and was disappointed when Meese left the White House. Whether he was getting on with Chief of Staff Don Regan and his crew isn't known, one way or the other. But there was no outward sign of difficulty.

Within the capital consulting trade, this is considered to be a good time to jump ship and set up shop. The business is based on inside contacts, and plenty of them now remain, whereas over the coming years, more and more Reagan appointees will be quitting to cultivate careers outside of government. Keyworth and Meyers will be on the outside, but with plenty of former colleagues still on the job inside.

In an interview with SGR on December 5, Bloch waved aside reports that he's on a short list to succeed Keyworth. He noted that the NSF directorship—which comes with a 6-year presidential appointment—has been plagued by rapid turnover among the last half dozen appointees. In office at NSF just since last year, Bloch, a former IBM Vice President, has often said that he's not bucking for anything and would be content to do a full term at NSF and leave his mark on the agency.

The statement that he issued on filling in at the White House was written before Bloch went abroad on December 6. It is a bit cagey. Referring to a discussion with Keyworth about his departure, the Bloch statement says, "I have offered to help to the extent that I could by providing some informal continuation in the affairs of the position during its vacancy."

There is a precedent for the White House leaning on the NSF Director for double duty as Presidential Science Adviser. In 1973, when Richard Nixon abolished what was then the White House Office of Science and Technology, he turned most of its functions over to the Office of the Director of NSF.

The mandarins of the scientific community were appalled at the loss of their seat in the palace, but under the then-NSF Director, Guy Stever, the level of wisdom in US goverment science-policy affairs did not diminish from where it had been. Stever points out, in fact, that R&D budgets and quite a few other things of importance to science and technology fared rather well under that arrangement.

Science & Government Report
Northwest Station
Box 6226A
Washington, D.C. 20015

Second class postage paid
at Washington, D.C.

SGR Holiday Schedule

The next issue of** Science & Goverment Report **will be published January 15, 1986.

XEROX-UNIVERSITY MICROFILMS
300 N. ZEEB RD.
ANN ARBOR, MI 48106